

# Mechanisms of Non-Native Speech Learning in Older Adults



Erin M. Ingvalson

*School of Communication Science and Disorders*

## Conclusions

Unlike younger adults, older adults' post-training generalization performance is not predicted by baseline phonological sensitivity but by baseline memory capacity. This suggests that older adults' are attempting to rote-memorize the training tokens, which is an inefficient strategy for speech perception learning. Future training paradigms may be more successful for older adults if they seek to reduce the working memory load.

## Background

Nearly nothing is known about the mechanisms of language learning in older adulthood. Younger adults' non-native speech performance is best predicted by baseline phonological sensitivity. If this is true for older adults, it means currently existing language training paradigms are likely to be successful for training older adults.

## Hypothesis

Like younger adults, older adults' post-training performance will be predicted by baseline phonological sensitivity for pitch patterns.

## Stimuli



Three tones (rising, falling, and level) were superimposed on six vowels. Listeners identified pitch patterns in a two-alternative forced choice test (called the Pitch-Contour Perception Test or PCPT). This test assesses listeners' baseline phonological sensitivity for lexical tone in a non-linguistic task, and is very predictive of learning performance for younger adults.



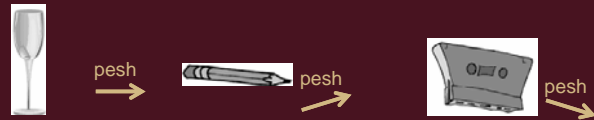
These tones were then superimposed on six syllables to 18 Mandarin-like pseudo-words. The syllables were consistent with English syllable structure. Each word's meaning was represented by a picture.

## Participants

	N (N female)	Age (St Dev)	Years of Musical Training	MMSE Score	PCPT Score
Older Adult Participants	48 (30)	65.06 yrs (6.75 yrs)	3.56 yrs (4.39 yrs)	28.06 (1.48)	59% (6.5%)

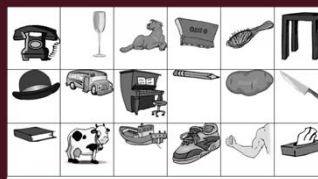
All participants were screened for no more than a mild hearing loss, and were cognitively healthy to participate in research according to the Mini Mental State Exam. Older adults' performance was compared to Perrachione et al. (2011), which used identical procedures in younger adults.

## Training



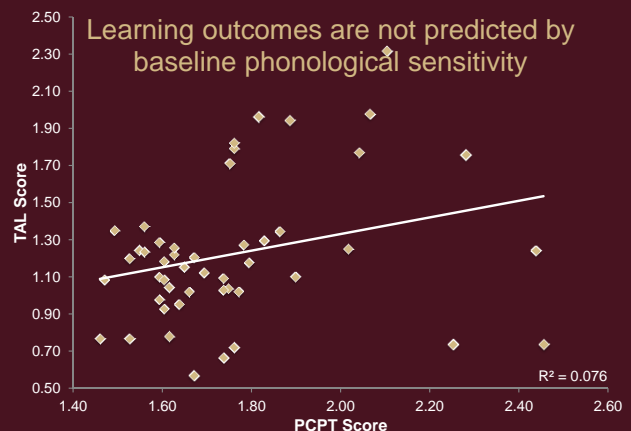
All training was done in the context of minimal triplets, to emphasize the difference in to-be-learned pitch patterns. Participants received feedback following their identification responses. All listeners trained for 8 days.

## Generalization Test

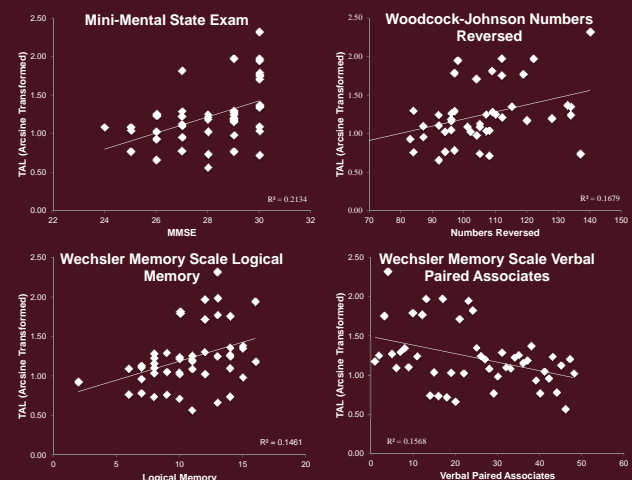


Post-training, listeners identified all 18 pseudo-words (6 syllables x 3 pitch patterns) spoken by 4 untrained talkers (2 male, 2 female; 72 total generalization stimuli). No feedback was given.

## Results



In older adults, post-training generalization performance was not predicted by baseline PCPT score.



However, older adults' generalization performance was predicted by baseline measures of working memory and declarative memory. Younger adults' generalization performance was not predicted by memory measures (not shown).